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# Forecasting Value in Acquisitions

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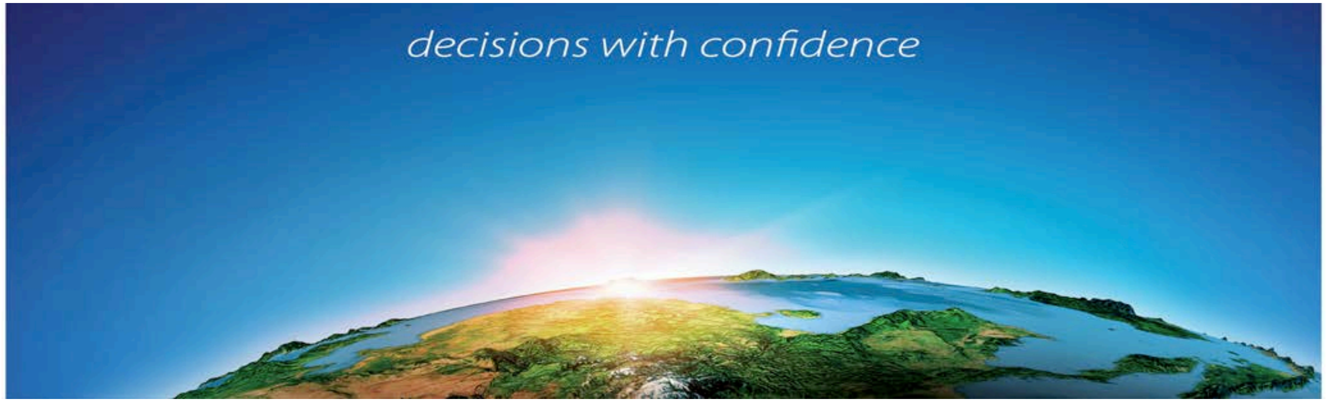
# 2018 Analysis using Public Data



# Components of Critical factors in Due Diligence

RISC

Status → Subsurface Cases* → Valuation Case* → Conclusions

**Status**

- ✓ Good
- ✗ Bad
- ? Ugly

**Subsurface Cases***

noble energy

Aspect Energy

bp

PERENCO

**Valuation Case***

VENTURE PRODUCTION plc

centrica

**Conclusions**

'***Calibration is King***' for continuous improvement

1) Question your assumptions (P90, Mode, P50, Mean, P10)
2) Focus on the **BIG** assets
3) Flag Black Swan events (as best you can)
4) RANGES are critical (including Low side): *Banks and Auditors are Sometimes Right*
5) Take care with Contingent/Undeveloped fields

## Valuation Methods

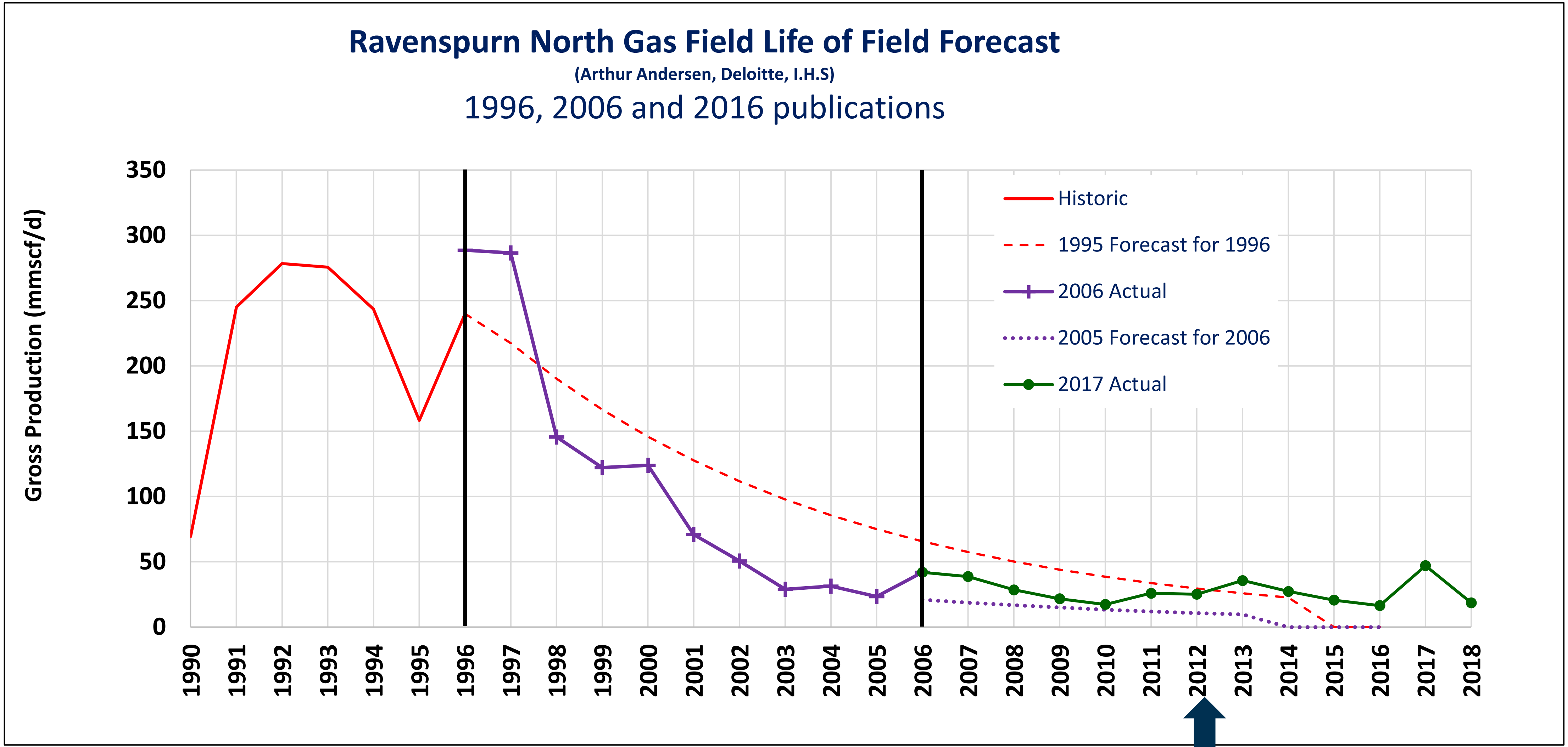
- Net Book Value
- EBITDA multiple
- Earnings per share
- Benchmarked $/Boe
- **Discounted Cash Flow & WACC**



**IMPORTANT**: Valuation is not the same as the price paid through negotiation

*1995, 2005, 2006, 2016 & 2018 Analysis using Public Data

# Practicalities of Production Forecasting (using historic production/DCA)





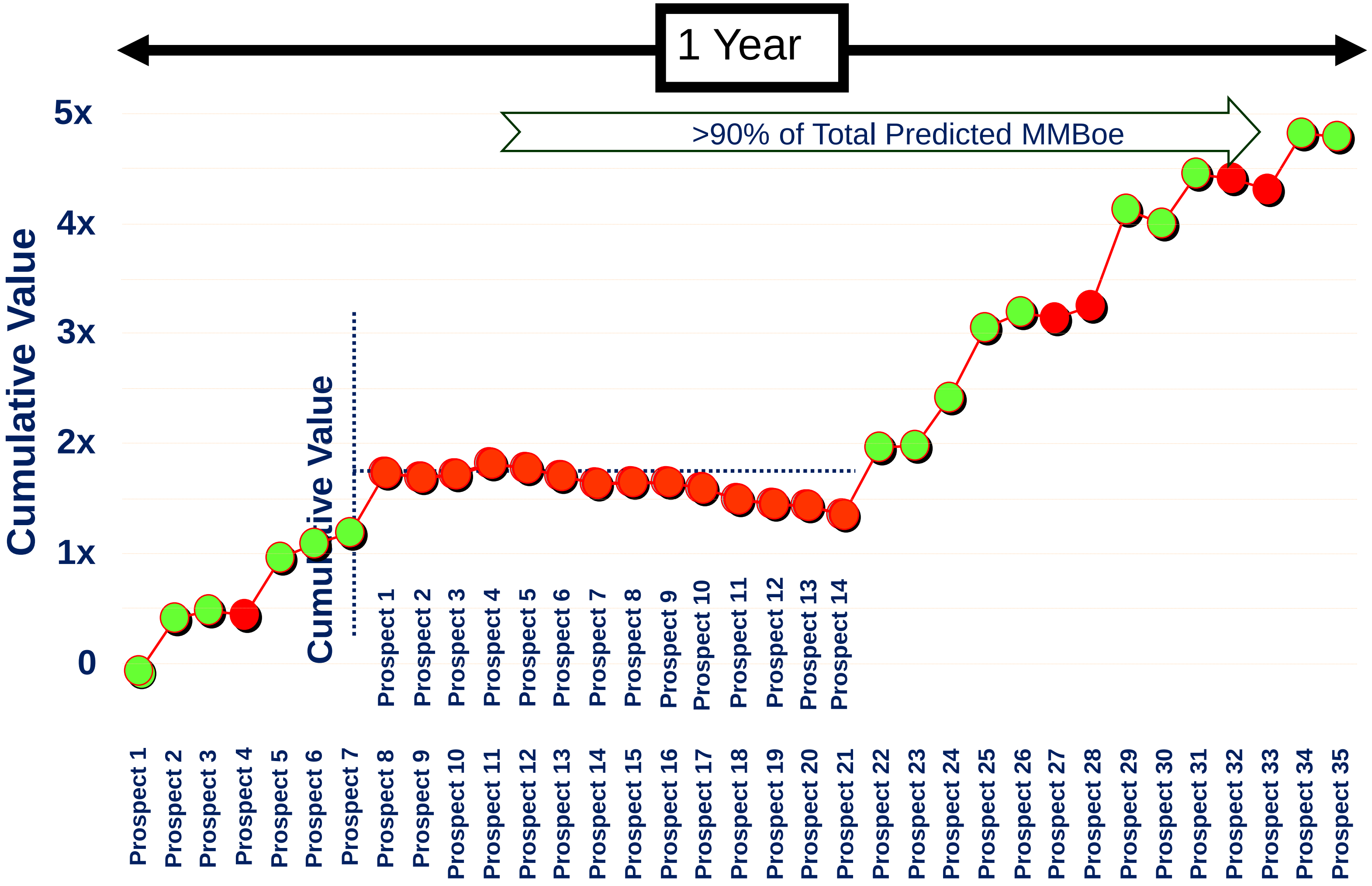
Ref: SPE (The Practicalities Of Optimizing the Bottom Line For Mature Fields)

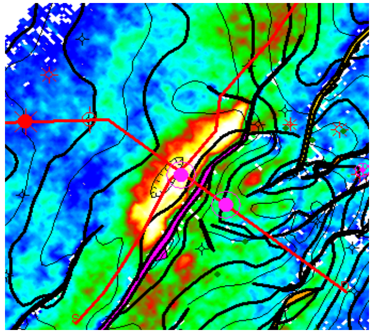
# Portfolio Effect: Volume Prediction (35 wells)

Onshore, Gulf of Mexico, USA

Aspect Energy

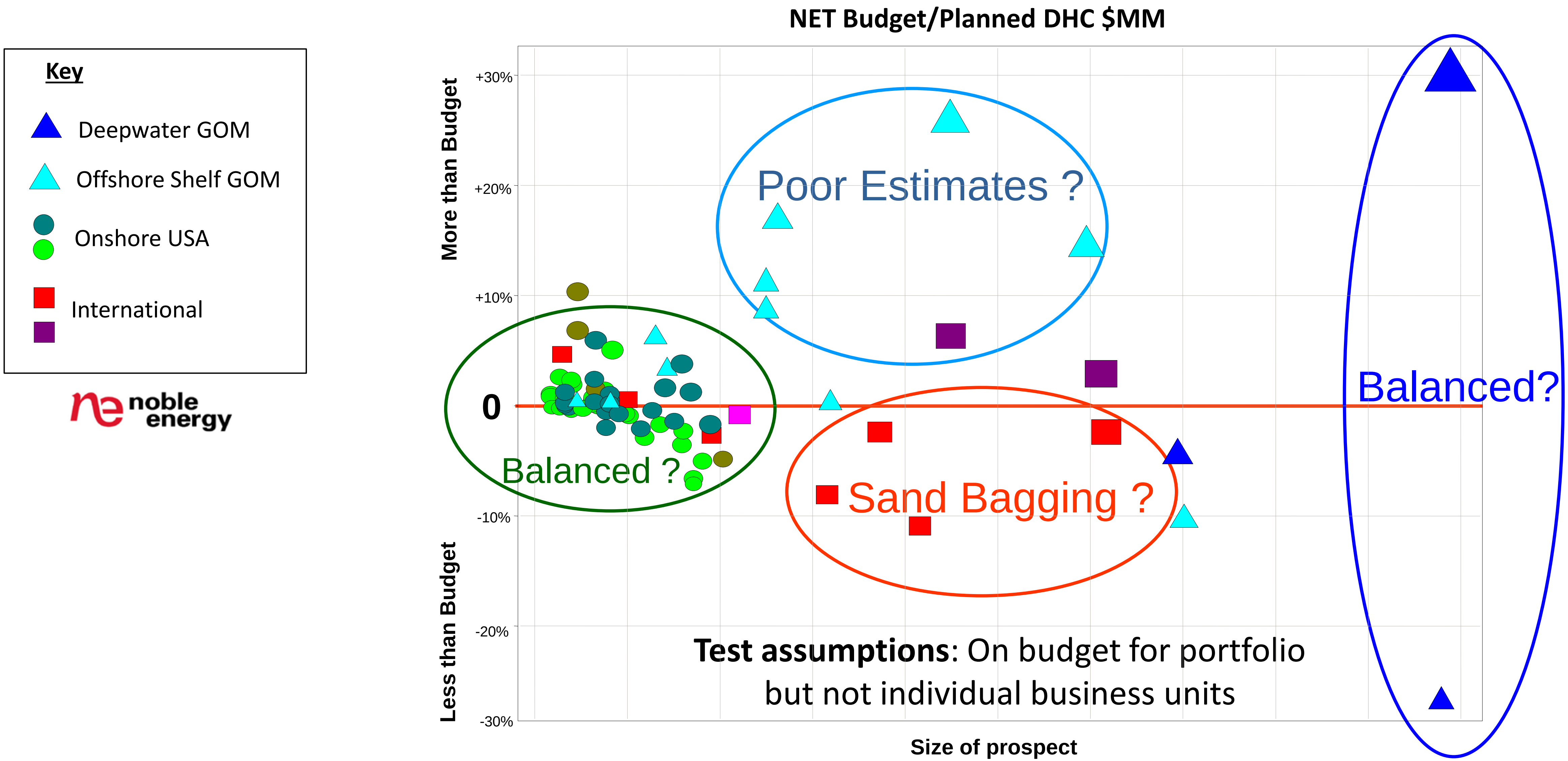
‘Expect’ approximately four to seven 6’s with thirty five rolls of the die



Ref: AAPG 2006 (Basics are Boring – The Essentials of Good Portfolio Management at Independent Oil and Gas Companies)

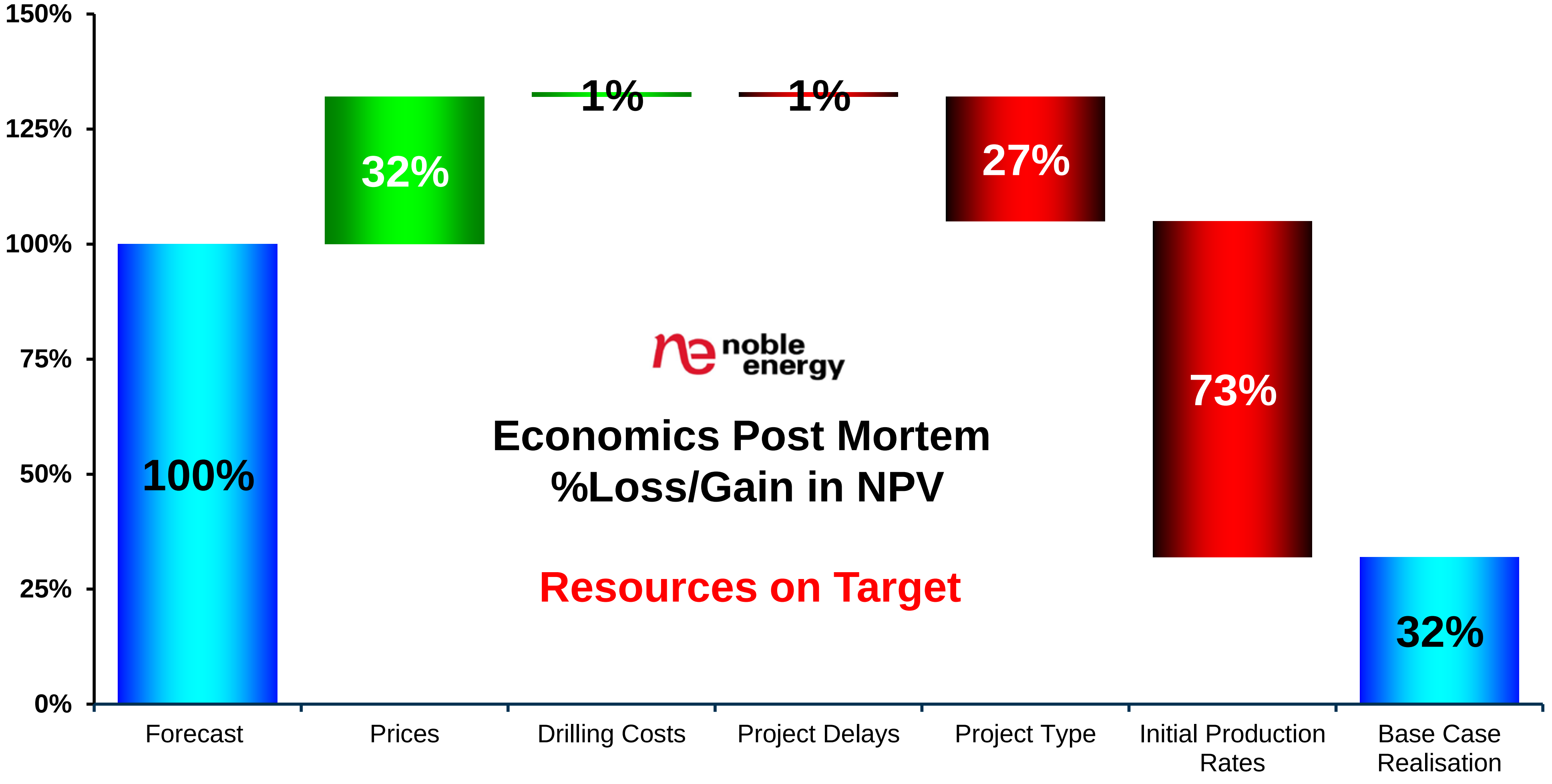
# Portfolio Effect: Cost Analysis of approx. 50 wells




**Test assumptions**: On budget for portfolio but not individual business units

Ref: AAPG 2006 (Basics are Boring – The Essentials of Good Portfolio Management at Independent Oil and Gas Companies)

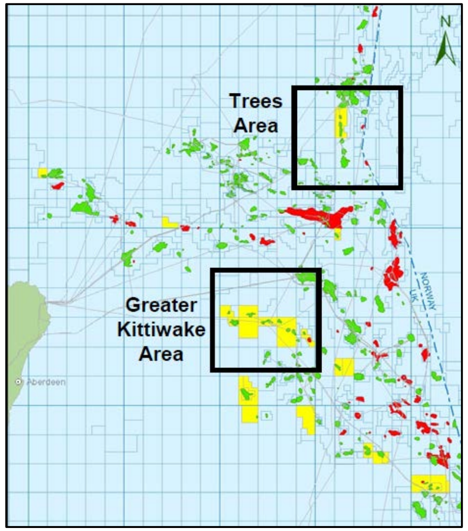
# Valuation Case History: Portfolio of approx. 50 wells

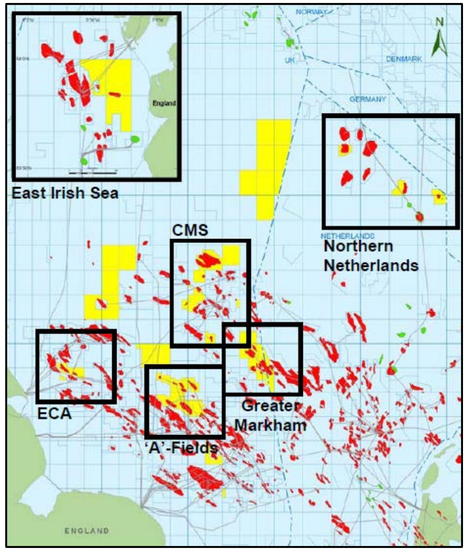




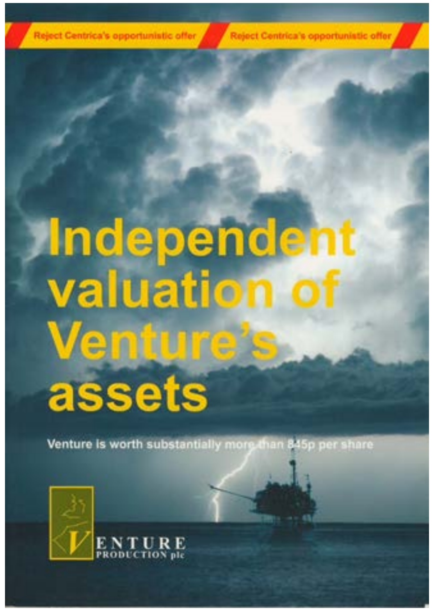

Ref: AAPG 2006 (Basics are Boring – The Essentials of Good Portfolio Management at Independent Oil and Gas Companies)

# Valuation Case History: Venture Production 2009 Portfolio Reviewed in 2018




## ***RISC*** engaged by Venture Production for CPR




Centrica plc paid £1.3 bill

| Venture Petroleum | Low Scenario (£ mill) | Base Scenario (£ mill) | Upside Scenario (£ mill) |
|---|---|---|---|
| Reserves | - | 1,742 | 2,209 |
| Contingent & Prospective | - | 160 | 225 |
| Other assets | - | 8 | 8 |
| **Total** | - | **1,910** | **2,442** |

**20 Producing Fields**

**26 Discovered Non-Producing**

**> 50 Prospects & Leads**

## 2018 Analysis & Look Back using Public Data

FINANCIAL TIMES

Venture concedes and accepts Centrica bid

Carola Hoyos AUGUST 25, 2009

Venture Production has grudgingly accepted defeat in its battle to thwart a £1.3bn takeover by Centrica, the UK's biggest utility.

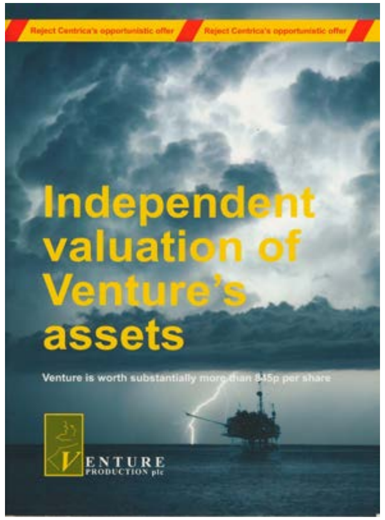
Venture's board on Tuesday at last recommended that investors accept Centrica's 845p offer. Even so, the board, which holds 12.5 per cent of the stock, reiterated its belief that the price undervalued the company.

Larry Kinch, one of Venture's founders, and ArcLight Capital Partners, the investment group, together own 12.8 per cent of Venture. For more than a month they had insisted the shares were worth at least £10. But after Centrica had managed to secure more than 50 per cent of Venture's shares, they told Venture's board on Tuesday they would accept the bid.

# Valuation Process: Forecast Low Scenario in 2009

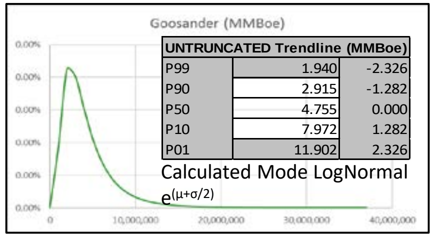
## 2018 Analysis & Look Back using Public Data

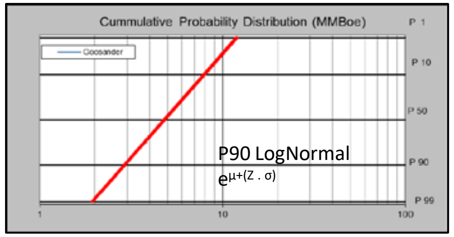
centrica paid £1.3 bill

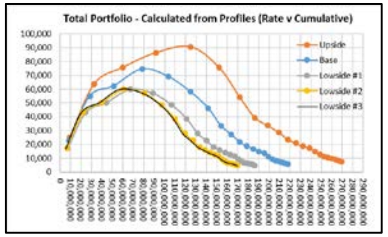


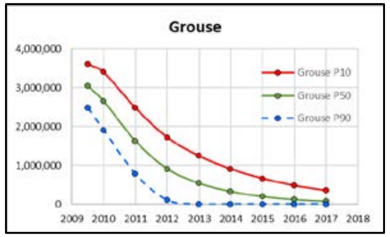

- 2009: RISC reviewed over 80% of Ventures assets on a 2P reserves basis.
- 2009: Contingent & Prospective resources valued using a unit value method ($/Boe).
- 2009: Effective date = 1 July 2009
- 2009: **No Low scenario**: only Base & Upside requested*

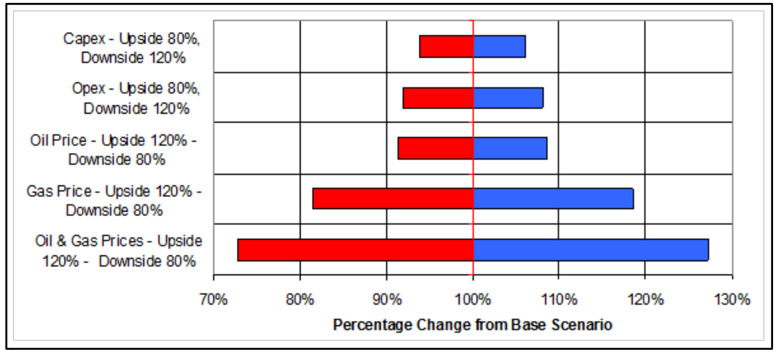
### Re-Creating Low side case production volume from Normalised type curves based on Base and Upside scenarios



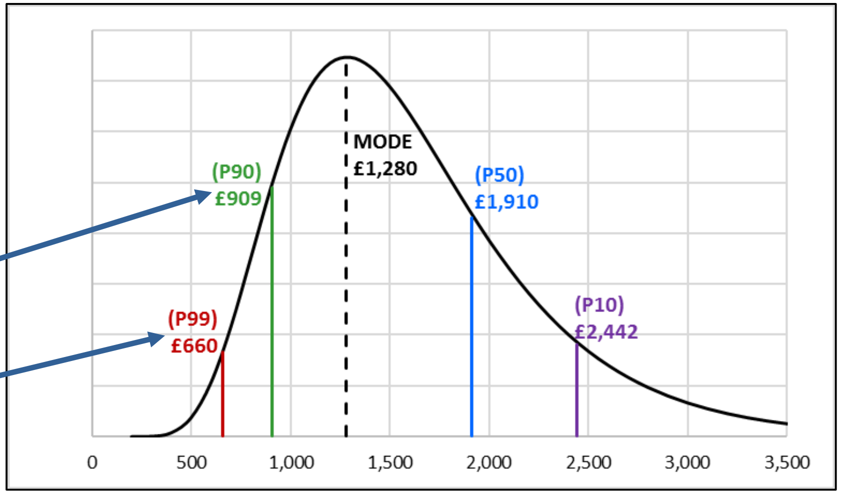




| Venture Petroleum | Low Volume Scenario* (£ mill) | Base Scenario (£ mill) | Upside Scenario (£ mill) |
|---|---|---|---|
| Reserves | 1,280 | 1,742 | 2,209 |
| Contingent & Prospective | 95 | 160 | 225 |
| Other assets | 8 | 8 | 8 |
| **Total** | **1,383** | **1,910** | **2,442** |
| | 909 | | |

**2009 Low Volume Case**



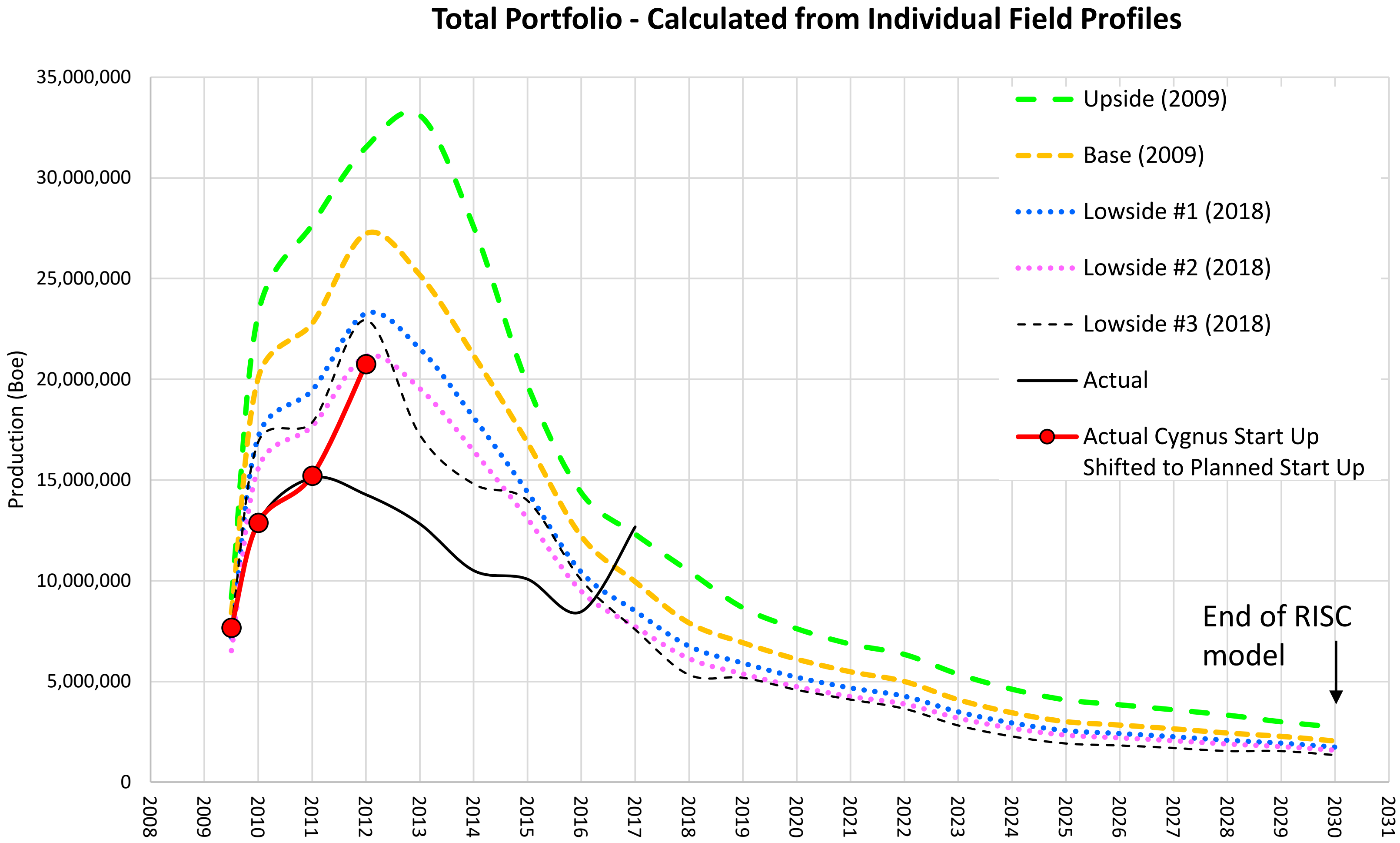

**2009 Forecast Low Case Valuation (P90)** = Volume & Price

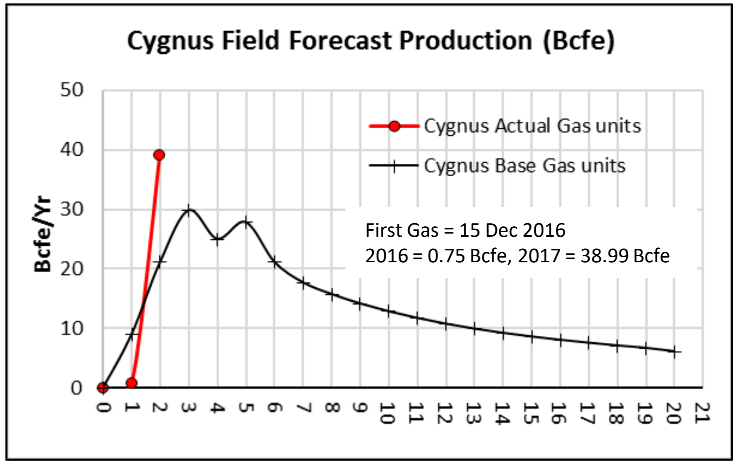
**2009 Forecast Lowest Case Valuation (P99)** = Volume & Price & Cost

(Ref: Production data from OGA & Netherlands https://www.nlog.nl/en/data )

# Forecast 2009 v Actuals 2018: Production

**2018 Analysis & Look Back using Public Data**



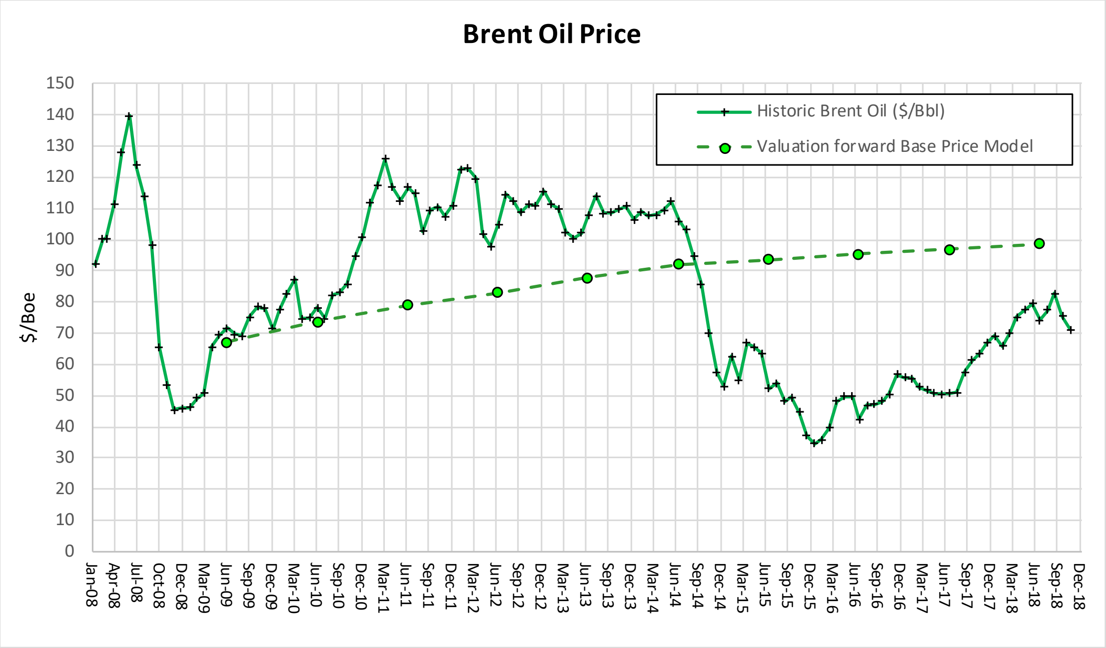

**DESCRIPTION**

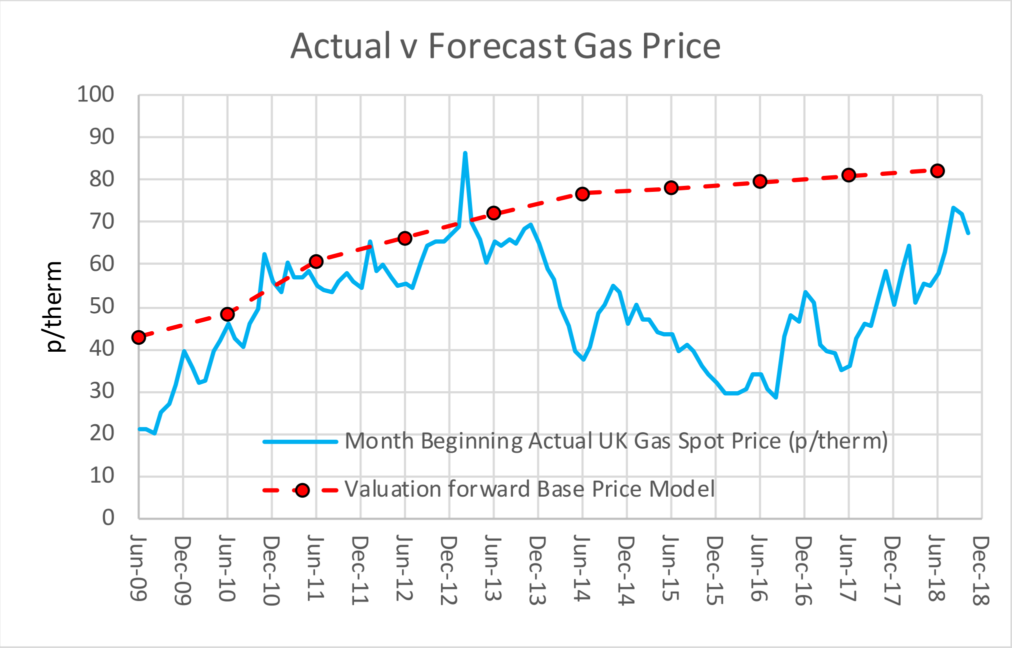
Lowside #1: Lognormal distribution - Modelled from Base & Upside
Lowside #2: Lognormal distribution - Modelled from Base & Upside
Lowside #3: Normal distribution - Modelled from Base & Upside

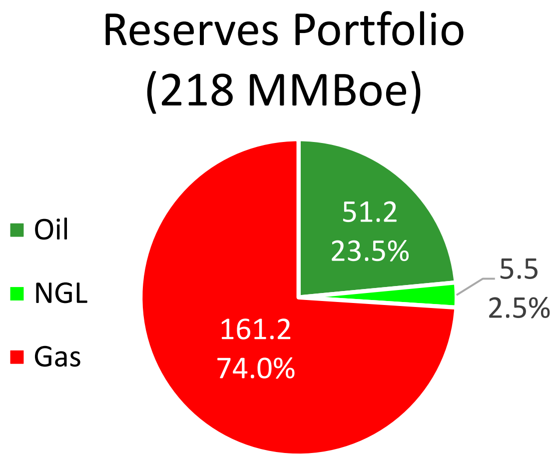
(Ref: Production data from OGA & Netherlands https://www.nlog.nl/en/data )

*Low scenario production volume from Normalised type curves based on Base and Upside cases

# Valuation Case History: Price Prediction

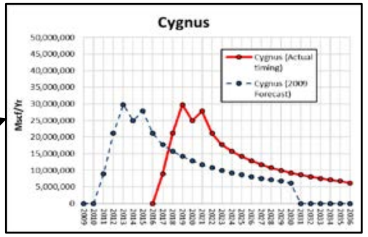


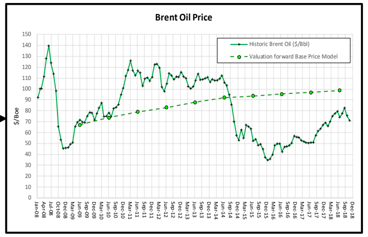



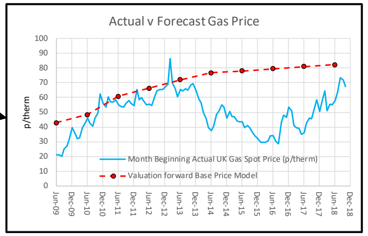



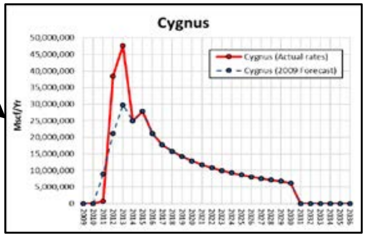
# Variance: £1.3 Billion Acquisition 2009 (CPR Base Valuation = £ 1.9 Bill)

| | Base Forecast in 2009 | Actual 2009 - 2018 | Variance 2009 - 2018 | %Variance |
|---|---|---|---|---|
| Cygnus Delay | £1,910 mill | £1,750 mill | (£-160) mill | -8.4% |
| Oil Price | £1,910 mill | £2,023 mill | £113 mill | 5.9% |
| Gas Price Change (No Cygnus delay) | £1,910 mill | £1,526 mill | (£-384) mill | -20.2% |
| Actual Cygnus Rates (No Cygnus delay) | £1,910 mill | £1,966 mill | £56 mill | 2.9% |
| Actual Production* (2009 – 2018) | £1,910 mill | £1,664 mill | (£-246) mill | -12.9% |
| Reforecast (Beyond 2018) | | | | |



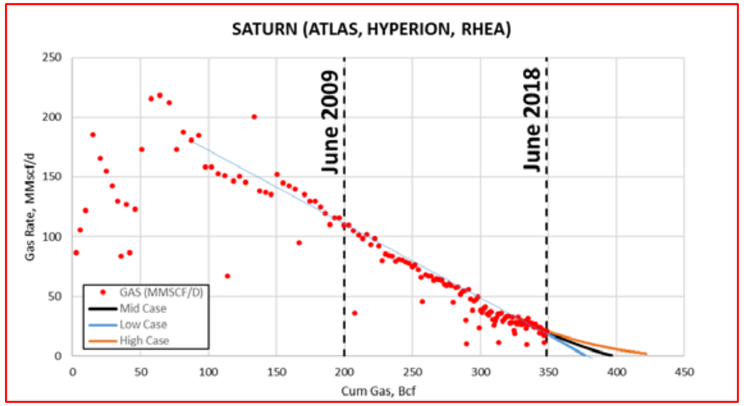



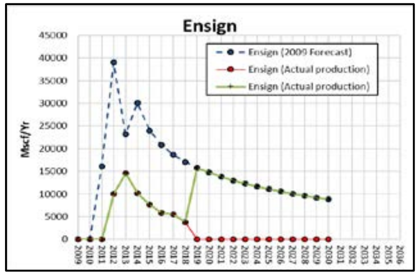

**Re-Forecast from 2018**

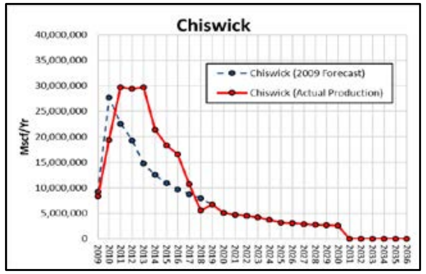
1) Chestnut
2) Mallard
3) Goosander
4) Grouse
5) Gadwell
6) Eris
7) Saturn
8) Cygnus (14 Bcf increase)

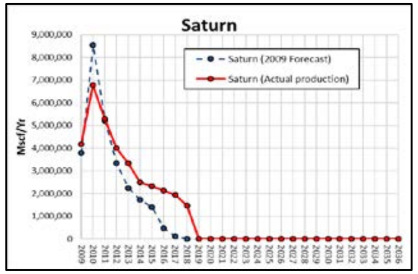
Remaining fields too small
e.g.: Ensign, Chiswick



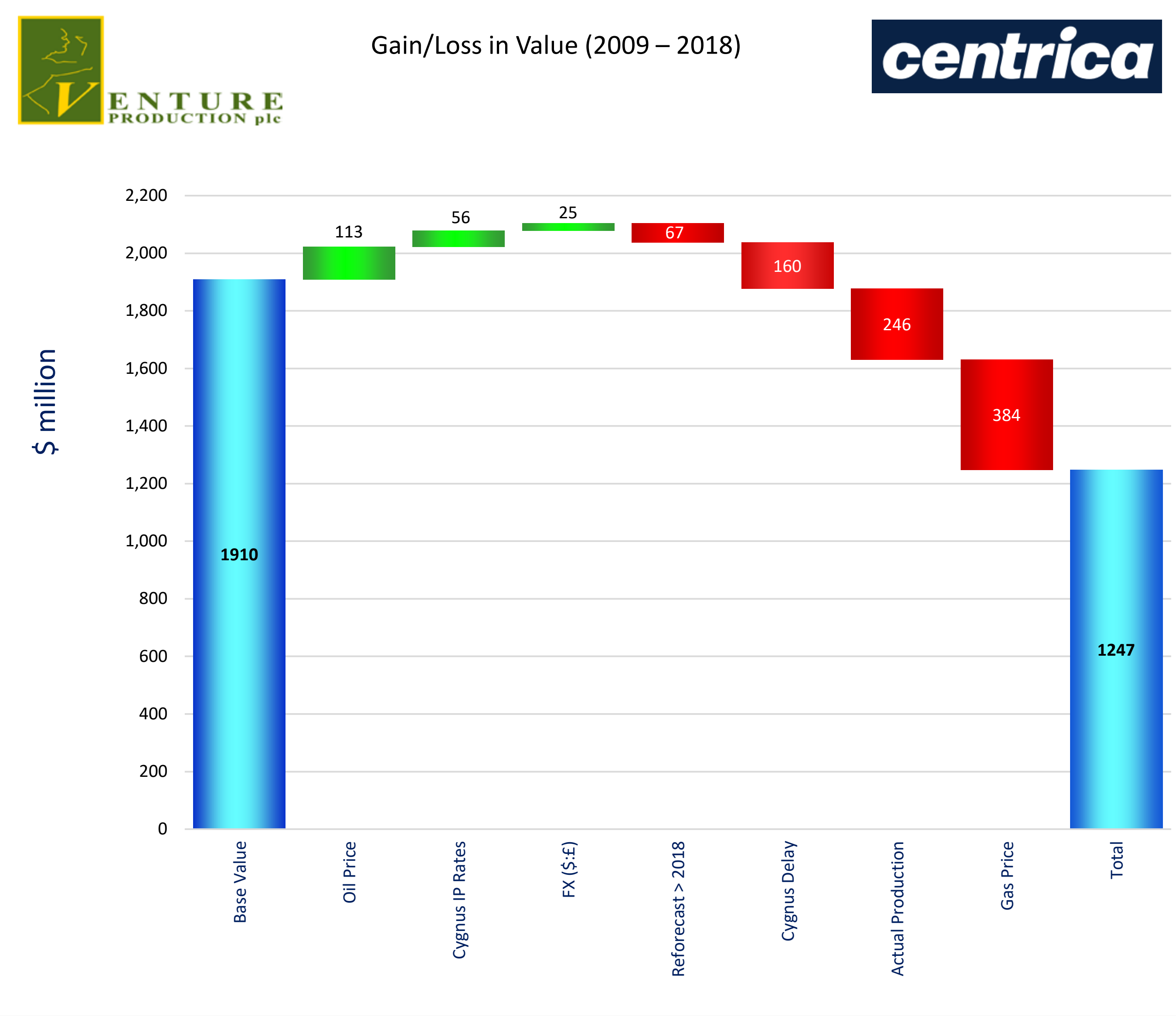

***Undeveloped Contingent Resources**: Acorn, Carna, Christian & Selkirk fields

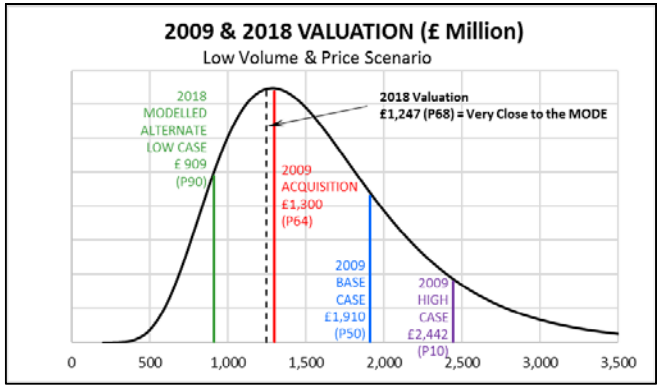


# Bridge the Gap: £1.3 Billion Acquisition & CPR Base Valuation = £ 1.9 Bill)




**Distribution**
**Volume + Cost**

**2018 Review in 2019: Add Back Value**

- Did not review actual costs – data not publicly available
- Did not model tax changes
  - Change in Small Fields Allowance (2010, 2012)
  - Shallow Water Allowance (2012)
  - Supplementary Charge (2011, 2016)
  - Decommissioning Relief (2017)
  - Investment & Cluster Allowance (2014, 2015)
- Did not model Cygnus Base increase from 560 Bcf to 635* Bcf (13%)

* Gross field Proven + Probable: Offshore Technology online

# Conclusions: ‘*Calibration is King*’ for continuous improvement

1. Question your assumptions (e.g.: New owner/acquirer uses same investment plan)

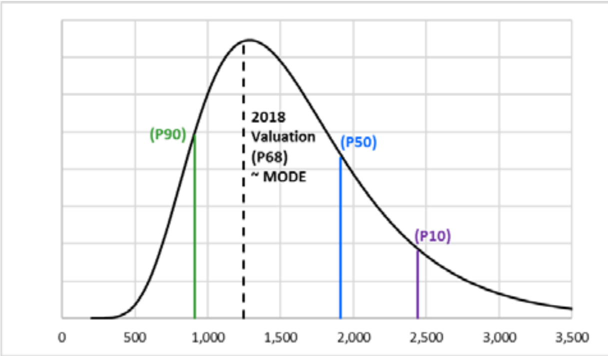
2. Focus on the **BIG** assets (they skew the portfolio effect)

3. Consider/Flag Black Swan* events (5 year delay?)

4. RANGES are critical (including Low side): Banks and Auditors are Sometimes Right

5. Treat Contingent/to be developed fields with extra care (not all convert to Reserves)


6. MODE = ‘*Most Likely*’




*Black Swan event = metaphor describing an event that is a surprise, has a major effect, and is often inappropriately rationalized after the fact with the benefit of hindsight: (Cygnus field?)

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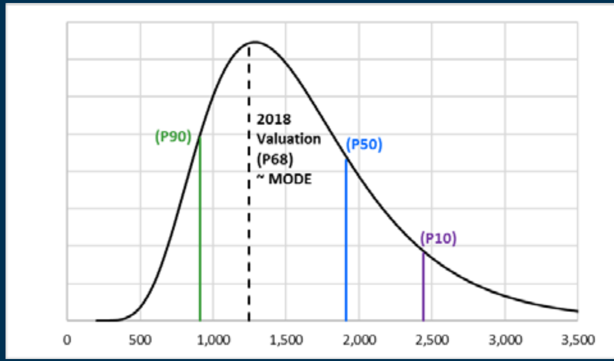


**Thanks to Adam Borushek (RISC, London office) & Simon Barber (RISC, Perth office)**

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